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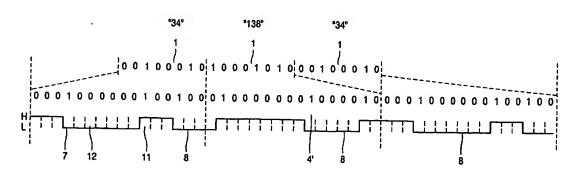
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(54) Title: SYSTEM OF CONVERTING INFORMATION WORDS TO A SIGNAL



(57) Abstract: A method of converting m-bit information words to a runlength constrained modulated signal is described. The available code words are distributed over at least one group (G1) of a first type and at least one group (G2) of a second type. The delivery of a code word belonging to the group of the first or second type establishes a coding state of the first type (S1) or one of a number r of coding states (S2, S3) of the second type depending on the current information word. For each information word a subset of code words is available, which subset has at leastone disjunct code word for each of the r coding states. The selection from the subset of the code word to be delivered is based the coding state, on dynamically verifying the runlength constraint for the sequence of code words, and on an additional criterion, like the low frequency content of the modulated signal.





INTERNATIONAL SEARCH REPORT A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H03M5/14 G11R G11B20/14 According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 H03M **G11B** Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practical, search terms used) **EPO-Internal** C. DOCUMENTS CONSIDERED TO BE RELEVANT Relevant to claim No. Category ° Citation of document, with indication, where appropriate, of the relevant passages US 5 790 056 A (U.S. PHILIPS CORPORATION) 1,11,13, Α 4 August 1998 (1998-08-04) 16.17 cited in the application column 1, line 1 - column 9, line 63; figures 1-9 column 1, line 53 - column 2, line 9 SCHOUHAMER IMMINK K A: "EFMPLUS: THE 1,11,13, Α 16,17 CODING FORMAT OF THE MULTIMEDIA COMPACT DISC" IEEE TRANSACTIONS ON CONSUMER ELECTRONICS. IEEE INC. NEW YORK, US, vol. 41, no. 3, 1 August 1995 (1995-08-01), pages 491-497. XP000539497 ISSN: 0098-3063 paragraph '00IV! paragraphs '00IV! - '000B!; figures 3,4; table 3 Further documents are listed in the continuation of box C. Patent family members are listed in annex. İΧ Special categories of cited documents: "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the *A* document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention filing date cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another

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Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5790056	A	04-08-1998	AT	201527 T	15-06-2001
35 5:5555			AU	703791 B2	01-04-1999
			AU	6666796 A	27-03-1997
			CA	2205565 A1	13-03-1997
			CN	1166225 A	26-11-1997
			DE	69612955 D1	28-06-2001
			DE	69612955 T2	20-12-2001
			EP	0789910 A1	20-08-1997
			ES	2159040 T3	16-09-2001
			GR	3036397 T3	30-11-2001
			HU	9801354 A2	28-10-1998
			WO	9709718 A1	13-03-1997
			IL	120740 A	26-07-2000
			JP	10508456 T	18-08-1998
			PL	320006 A1	01-09-1997
			PT	789910 T	30-11-2001
			RU	2153200 C2	20-07-2000
			TW	394931 B	21-06-2000